

REMARKS / ARGUMENTS

A. Summary of the Amendments

The specification has been amended in order to correct certain minor informalities. In particular, the specification has been amended to clarify the use of the terms "line transmission rate" and "arbitrary transmission rate" such that the terms are used in a consistent manner.

The specification has also been amended in order to correct certain typographical errors. In particular, typographical errors detected by the Examiner were corrected in the specification. Specifically, the application serial number "09/349,086" on page 3, line 14 of the description was replaced with "09/349,087", and the reference number "206" is now used to reference the mapping unit only.

Claims 1, 10 and 16 have been amended in order to clarify the subject matter being claimed. Support for the amendments made to claims 1, 10 and 16 can be found at page 9, lines 13-15.

Claim 9 has been amended in order to clarify the subject matter being claimed. Support for the amendments made to claim 9 can be found at page 14, line 29 to page 15, line 3.

Claim 13 has been amended in order to correct a claim dependency.

The drawings have been amended in order to correct certain reference numbers and to show specific inputs to certain functional elements. Furthermore, the functional elements in the block diagrams have been clearly labeled with respective reference names.

The Applicant respectfully submits that no new matter has been added to the application by the present amendments.

B. Statements of Rejection and Reply

37 C.F.R. 1.84(p)(5)

In the Office Action, the Examiner has objected to the former drawings for failure to comply with 37 C.F.R. 1.84(p)(5). Specifically, the Examiner states that the clock generator unit which is referenced as "204" on pages 8-11 of the specification, is not labelled as such in Figure 2.

In response, Figure 2 of the drawings has been amended to include the reference number "204". The Applicant respectfully submits that the drawings now comply with 37 C.F.R. 1.84(p)(5).

37 C.F.R. 1.84(p)(4)

The Examiner has objected to the former drawings for failure to comply with 37 C.F.R. 1.84(p)(4). Specifically, the Examiner states that the reference number "206" is used to designate both the "multiplier" and the "mapping unit" in former Figure 2. In addition, the Examiner states that the reference characters "CLK2" in former Figures 2-3 and "CLK" in former Figure 4 are both used to designate the "line transmission rate" of signal S' in Figures 1-4.

In response, Figure 2 of the drawings has been amended such that the reference number "206" is used to designate the "mapping unit", while reference number "216" is used to designate the "multiplier". Furthermore, Figures 2-4 of the drawings have been amended to replace the reference characters "CLK2" and "CLK" with the reference "second data clock signal". The Applicant respectfully submits that the drawings now comply with 37 C.F.R. 1.84(p)(4).

37 C.F.R. 1.83(a)

The Examiner has objected to the former drawings for failure to comply with 37 C.F.R. 1.83(a). Specifically, the Examiner has stated that the specific inputs to functional elements 304 and 306 of Figure 3 and 412, 414 and 416 of Figure 4 are not shown as described in the specification.

In response, Figures 3-4 of the drawings have been amended to show specific inputs to functional elements 304, 306, 412, 414 and 416. The Applicant respectfully submits that the drawings now comply with 37 C.F.R. 1.83(a).

35 U.S.C. §112

The Examiner has objected to the specification under 35 U.S.C. 112, first paragraph, for not being written in "full, clear, concise, and exact terms". Specifically, the Examiner has indicated that the use of the terms "line transmission rate", "arbitrary transmission rate", "data clock signal", "CLK1", "CLK2" and "CLK" are presented throughout the specification in an inexact and confusing manner.

In response, the specification has been carefully revised. In particular, amendments were made to the specification in order to clarify the use of the terms "line transmission rate" and "arbitrary transmission rate" such that the terms are used in a consistent manner. Furthermore, amendments were made in order to remove the terms "CLK1", "CLK2" and "CLK" from the drawings.

The Examiner has also rejected claims 1-8 and 16 under 35 U.S.C. 112, second paragraph, for being indefinite and failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Specifically, the Examiner has indicated that claims 1 and 16 recite the limitation of "the optical network" without having sufficient antecedent basis.

In response, claims 1 and 16 have been amended in order to replace the term "the optical network" with the term "the network", for which there is sufficient antecedent basis. The Applicant respectfully submits that the claims, as amended, are now in full compliance with 35 U.S.C. 112.

35 U.S.C. §102 / §103

In the Office Action, the Examiner has rejected claims 1-6 and 9-16 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,563,891 (hereinafter referred to as Wang). The Examiner has also rejected claims 7-8 under 35 U.S.C. §103(a) as being unpatentable over Wang in view of U.S. Patent 4,488,294 (hereinafter referred to as Christensen et al.).

The Applicant respectfully submits that the claims now on record distinguish patentably over the cited prior art, as discussed below.

The present invention is concerned with the problem of directly transporting electrical signals of arbitrary transmission rates over a data network that is characterized by a pre-defined range of allowable transmission rates, where these arbitrary transmission rates may fall outside the pre-defined range of allowable transmission rates for the network. In contrast, Wang is concerned with reducing waiting time jitter in a pulse-stuffing multiplexer of a communications network (see Abstract), which is a completely different problem from that addressed by the present invention.

The Examiner's attention is directed towards the following limitations of amended claims 1 and 16 [emphasis added]:

Claim 1

A synchronizer for mapping an electrical digital signal of arbitrary transmission rate for transport over a network characterized by a range of allowable

transmission rates, said synchronizer comprising:

[...]

- c) a clock generator unit coupled to said data recovery unit for receiving the first data clock signal, **said clock generator unit being operative to generate a second data clock signal by applying a frequency multiplication to the first data clock signal, whereby the second data clock signal is indicative of a line transmission rate that falls within the range of allowable transmission rates for the network;**

[...]

Claim 16

A synchronizer for mapping an electrical digital signal of arbitrary transmission rate for transport over a network characterized by a range of allowable transmission rates, said synchronizer comprising:

[...]

- c) clock generator means coupled to said data recovery means for receiving the first data clock signal, **said clock generator means being operative to generate a second data clock signal by applying a frequency multiplication to the first data clock signal, whereby the second data clock signal is indicative of a line transmission rate that falls within the range of allowable transmission rates for the network;**

[...]

Wang does not disclose, teach nor suggest the invention claimed in claims 1 and 16. More specifically, Wang does not teach a synchronizer having a clock generator operative to "generate a second data clock signal by applying a frequency multiplication to the first data clock signal, whereby the second data clock signal is indicative of a line transmission rate that falls within the range of allowable transmission rates for the network".

At page 5 of the Office Action, the Examiner states that Wang teaches that "[t]he recovered first clock signal is then utilized to generate a second clock signal indicative of an allowable transmission rate of the network". In support of this contention, the Examiner has cited column 8, lines 43-57, as well as column 10, lines 15-19, of the Wang patent. The Applicant respectfully submits that, within these passages, Wang discusses a locally generated "clock that is synchronized to the higher rate signal". This locally generated clock is regulated by a justification circuit that monitors the phase difference between the write and read signals, for generating a "gapped read clock" based on which data of the

lower rate signal is read out of the elastic buffer.

There is no mention nor discussion in the passages cited by the Examiner, nor anywhere else in the Wang patent, of generating a second data clock signal by applying a frequency multiplication to the first data clock signal recovered from the electrical digital signal of arbitrary transmission rate. Furthermore, there is no discussion of such a second data clock signal being indicative of a line transmission rate that falls within the range of allowable transmission rates for the network.

Accordingly, the Applicant respectfully submits that Wang does not disclose nor suggest all of the elements of claims 1 and 16, such that Wang does not anticipate nor render obvious the subject matter of claims 1 and 16.

On page 7 of the Office Action, the Examiner states that:

"Christensen et al. (4,488,294) discloses a system for establishing and supporting data traffic (synchronizer) that defines a synchronous transmission clock rate (second clock signal) by multiplying the clock rate of the user's data (first clock signal) by a variable factor (control signal) [...] It would also have been obvious to one of ordinary skill in the art at the time of the invention to modify the synchronizer of Wang with a clock generator such as that taught by the synchronizer of Christensen that multiplies a first clock signal by a control signal to produce a second clock signal. this would effectively maintain a correlation between the first and second clock signals as the data bits are mapped to different rates throughout the synchronization process."

As set forth in § 2143.01 of the *Manual of Patent Examining Procedure* (MPEP), in order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The Applicant respectfully submits that neither Wang nor Christensen et al. suggests or anticipates the benefits of combining these two references.

More specifically, there is no mention in Wang of the desirability of generating "a second data clock signal by applying a frequency multiplication to the first data clock signal" recovered from the lower rate data signal, nor is there any need for such a second data clock signal. As discussed above, the "gapped read clock" taught by Wang is not generated directly from the write clock recovered from the lower rate data signal, which clearly precludes the possibility of applying multiplication to the write clock in order to generate the "gapped read clock".

MPEP § 2143.01 also provides that:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. (*In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990))

Furthermore, even if all elements of a claim are disclosed in various prior art references, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill would have been prompted to combine the teachings of the references to arrive at the claimed invention. (*In re Regel*, *supra*, 188 USPQ 132 (CCPA 1975))

In light of the foregoing, the Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness. Accordingly, claims 1 and 16 now on record are believed to be in full condition for allowance.

Claims 2-8, which depend either directly or indirectly from base claim 1 and therefore include all of the limitations of claim 1, are also believed to be novel, non-obvious and in condition for allowance.

The Examiner's attention is directed towards the following limitations of amended claim 9 [emphasis added]:

Claim 9

A desynchronizer for reverse mapping a data signal received from a network, the data signal being characterized by a line transmission rate **and including data indicative of an arbitrary transmission rate**, said desynchronizer comprising:
[...]

- c) a reverse mapping unit operative to **extract from the data signal [...] the data indicative of an arbitrary transmission rate;**
- d) a data transmitter unit coupled to said reverse mapping unit for **transmitting the extracted stream of data bits at the arbitrary transmission rate;**
- e) an output for releasing an electrical signal containing the extracted stream of data bits **at the arbitrary transmission rate.**

The Applicant respectfully submits that Wang does not disclose, teach nor suggest the invention claimed in claim 9 as amended.

Specifically, Wang neither teaches nor suggests a desynchronizer having a reverse mapping unit that is operative to extract data indicative of an arbitrary transmission rate from the received data signal, where this arbitrary transmission rate is used by the desynchronizer to release an electrical signal.

Accordingly, since Wang does not teach all of the limitations of claim 9, the Applicant respectfully submits that the subject matter of claim 9 is neither anticipated nor rendered obvious by Wang. As such, claim 9 now on record is also believed to be in full condition for allowance.

The Examiner's attention is directed towards the following limitations of independent claim 10 [emphasis added]:

Claim 10

A method for transmitting an electrical digital signal of arbitrary transmission rate over a network characterized by a range of allowable transmission rates,

comprising:

[...]

- b) **generating a second data clock signal by applying a frequency multiplication to the first data clock signal, whereby the second data clock signal is indicative of a line transmission rate that falls within the range of allowable transmission rates for the network;**

[...]

For the same reasons set forth above with respect to independent claims 1 and 16, the Applicant respectfully submits that the subject matter of claim 10 is neither anticipated nor rendered obvious by the cited prior art references. As such, claim 10 is also believed to be in condition for allowance.

Claims 11-15, which depend either directly or indirectly from base claim 10 and therefore include all of the limitations of claim 10, are also believed to be novel, non-obvious and in condition for allowance.

CONCLUSION

In view of the above, it is submitted that claims 1-16 are in condition for allowance. Reconsideration of the rejections and objections is requested. Allowance of claims 1-16 at an early date is solicited.

If the claims of the application are not considered to be in full condition for allowance, for any reason, the Applicant respectfully requests the constructive assistance and suggestions of the Examiner in drafting one or more acceptable claims or in making constructive suggestions so that the application can be placed in allowable condition as soon as possible and without the need for further proceedings.

Respectfully submitted,
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